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Hysterectomy in Pregnancy with Tuberculosis.—As a substitute for abortion hysterectomy during pulmonary tuberculosis has not only the advantage that it prevents future pregnancies but that it is followed by a more rapid convalescence than is an abortion. Removal of the uterus also puts a stop to the monthly loss of blood which is so badly borne by women with severe tuberculosis, and in some cases hysterectomy may well be considered as indicated in nonpregnant women. The operation gave excellent results in four cases of removal of pregnant uteri, and in one case of removal of a nonpregnant uterus; a second nonpregnant case failed to improve after hysterectomy, probably because the operation was made at a late stage of the disease.—*Hysterectomy in Certain Cases of Pulmonary Tuberculosis; Particularly as an Alternative for Therapeutic Abortion, J. F. Baldwin, Surg. Gyn. and Obst., August, 1923, xxxvii, 201.*

Fatal Tuberculosis Beginning with Erythema Nodosum and Paronychia.—The first symptoms, beginning with an apparent erythema nodosum of the legs, were followed two years later by a tuberculous paronychia of the fingers which improved under X-ray treatment. A few months later rapidly progressing pulmonary and abdominal symptoms led to the patient's death. There were no signs of throat or chest lesions during the existence of the paronychia. An hematogenous origin of the manifestations subsequent to the erythema nodosum could be suspected.—*Tuberculous Paronychia, J. H. Stokes, Arch. Dermatol. and Syphilol., July, 1923, viii, 44.*

Erythema Induratum Improved by Ultraviolet Light.—Five cases were treated by pressing the quartz glass window of the Kromayer lamp against the indurated lesions of each area for one to two minutes. The lamp was used on a 110 volt direct current. All the lesions disappeared and there were no recurrences.—*The Use of Ultraviolet Light in Erythema Induratum, E. L. Oliver, Arch. of Dermatol. and Syphilol., November, 1922, vi, 619.*

Atypical Bovine Tuberculosis of Skin.—Skin lesions in cattle ordinarily consist of small nonsuppurating tumors very poor in bacilli. Being seldom infectious for guinea pigs, these bacilli are thought to have a very low virulence. Lesions of a very different sort were observed in a cow, namely, numerous abscesses the size of hens' eggs situated under the skin of the thorax. One of them communicated by a narrow fistula with a large subcutaneous pus pocket. The lesions resembled chronic abscesses in man. They contained large quantities of bacilli which killed guinea pigs in 40 to 45 days. Special precautions should be taken against such cases of bovine tuberculosis which may distribute great quantities of virulent germs.—*Tuberculose souscutanée chez une vache, Besnoit and Robin, Meeting Soc. d. Méd. d. Toulouse, June 11 and 21, 1923, Reported in Presse Méd., July 14, 1923, no. 56, 624.*

Diagnosis of Tuberculous Meningitis by Skin Test with Spinal Fluid.—The cerebrospinal fluid from 16 cases of tuberculous meningitis in children was filtered germ-free, after which 0.1 cmm. was injected intracutaneously into the skin of the forearm. A control with normal salt solution and in some cases also with horse serum was run. The results were read 24 and 48 hours later, and observed for some time afterward. The tests were done on 2 series of children,

those who gave a positive Pirquet and those who were negative. *Results:* Autoinoculation of the fluid from a tuberculous meningitis case usually gave a negative reaction; the inoculation of the same fluid into children with a positive Pirquet gave in many cases a positive reaction. The inoculation with normal spinal fluid gave as many positives in children with a positive Pirquet as when the spinal fluid from a tuberculous meningitis case was used. In children with a negative Pirquet, inoculations with normal spinal fluid or that from a case of tuberculous meningitis gave negative results. This reaction, therefore, is an hypersensitive reaction of tuberculous individuals, nonspecific and similar to the reactions obtained with protein injections. The "reaction body" is not a specific antigen. The reaction is of no value for the diagnosis of tuberculous meningitis because it is a nonspecific reaction. For the same reason Wildbolz's auto-urine inoculation should be discarded.—*Über die Verwertbarkeit der Hautreactionen mit Liquor Cerebrospinalis zur Diagnose der tuberkulösen Meningitis, Gertrud Usbek, Klin. Wchnschr., March, 1923, ii, 438.*

Vernal Peak of Tuberculous Meningitis in Childhood.—The material of the Frankfort Children's Clinic reveals a spring peak for tuberculous meningitis. Spring time is distinctive for the rapidly approaching warm weather, increase in the amount of sunshine, lessened atmospheric pressure, more violent and frequent winds, relative dryness, and less cloudiness; all factors in the spring peak. Spring conditions favor an aggravation of tuberculosis and thus bacillary seeding by the blood. Increased bacillary seedings, on the one hand, and greater chance for development in the meninges, on the other, both occasioned by meteorological conditions as they occur in spring, are given as the main causes of the spring peak of tuberculous meningitis during childhood.—*Zur Frage des Frühjahrgipfels der tuberkulösen Meningitis im Kindesalter unter besonderer Berücksichtigung des Einflusses der Witterung, E. Albinger, Beitr. z. Klin. d. Tuberk., April, 1922, li, 223.*

Spastic Hemiplegia in Miliary Tuberculosis in Infant.—A year and a quarter old child had symptoms leading to the diagnosis of *hemiplegia spastica infantilis.* Clinically it appeared to be the result of an encephalitis of unknown origin, although malformations, hemorrhage, abscess, tumor and emboli could not be ruled out. Necropsy disclosed an acute miliary tuberculosis involving hilum and mesenteric lymph nodes, both lungs, kidneys, spleen, liver, intestines and brain. A solitary tubercle was present in the right cerebral hemisphere near the basal ganglia, and miliary tubercles were present in the cortical region in both hemispheres.—*Akute Miliartuberkulose unter dem Bilde der Hemiplegia spastica infantilis, O. Herz, München. med. Wchnschr., February 23, 1923, 238.*

Effects of Irritant Gas on Respiratory Tract.—The symptoms produced by exposure to mustard gas (*dichlorethylsulphide*) were familiar during the Great War. The chief complaints were cough, often with expectoration, pain in the chest, dyspnea on exertion; the larynx was usually involved, with hoarseness and loss of voice. Hemoptysis occasionally occurred when cough was severe. Tachycardia was common, and asthmatic attacks were later noted in a few instances. Meakins and Walker stated that of cases admitted from France (average duration two weeks) 65 per cent were fit for discharge within five weeks. Of those remaining under treatment for over seven weeks, dyspnea was complained of in 55 per cent, precordial pain in 29 per cent, tachycardia in 20 per cent, vomiting in 11 per cent. Only five men (3 per cent) were dicharged permanently unfit for military service, only one of whom had a tuberculous condition. Ramon and Guilhaume, working in the gas clinic of Achard in France, classified 162 cases suffering from disorders of organic nature into six groups, as follows: (1) recurrent simple bronchitis, 27 cases; (2) emphysema with bronchitis, 31 cases; (3) recurrent congestive edema of the bases of the lungs, 21 cases; (4) delayed pulmonary abscess, 9 cases; (5) true pulmonary tuberculosis, 2 cases; and (6) "pseudotuberculosis," 17 cases. The development of actual pulmonary tuberculosis after gassing is, according to these authors, rare. There may, however, be ground for mistaken diagnosis in those cases in which the pulmonary tissue is affected by the irritant and a slight sclerosis or fibrosis appears to result. The pulse and temperature, however, are not such as to indicate a tuberculous process while shortness of breath is greater than would be expected. Small mucocrepitant râles may occur, but tubercle bacilli were not found in the sputum.—*The Effects, Immediate and Remote, of Irritant Gas (Dichlorethylsulphide) Poisoning on the Respiratory Tract, P. R. McNaught, Tubercle, May, 1923, iv, 345.*

Pulmonary Sequel of Influenza.—Twelve cases of a pulmonary condition

occurring after uncomplicated influenza are reported. Chest examination usually showed a definite area of slight dulness or, better, increased resistance to percussion, accompanied by feeble bronchovesicular breathing and, in the minority of cases, a few inspiratory crepitant râles. The right lower lobe was most commonly affected; occasionally the left, and usually the upper half of these lobes. Fever, when present, was of low grade and not constant. In one case X-rayed, the film showed a triangular area of density based on the periphery of the lung and extending to the hilum in the part of the lung yielding the physical signs. The pathology of this condition has been considered as possibly that of a peribronchial infiltration. Treatment has been rest in bed with sodium iodide and occasionally codein for the cough. The course of the disease has always been towards recovery, which usually occurred in from four to six weeks. The condition prescribed may be the precursor of more serious trouble or it is merely the explanation of the strangely long convalescence.—*A Pulmonary Sequel of Influenza, O. H. Stansfield, Boston M. & S. J., May 10, 1923, clxxxviii, 734.*

Pulmonary Fibrosis.—The patient, a woman, aged 52, gave a history of blood-spitting at intervals for fifteen years. Following a pleurisy on the right, progressive and massive fibrosis of the right lung developed over a period of four and a half years, the left lung remaining clear. During this time hemoptyses recurred but there was no cough, expectoration or dyspnea. Malignant growth was ruled out by the duration of the disease with good general condition. Blood and spinal fluid Wassermanns were negative and antisyphilitic treatment was ineffective. Tubercle bacilli could not be found in the scant expectoration following hemoptysis, and subcutaneous injections of graded doses of O. T. up to 10 mgm. produced no reaction. The case is one of some unknown, low-grade infectious process which has spread from the pleura to the interstitial tissue, finally involving practically all of the parenchyma of the lung.—*Pulmonary Fibrosis, Report of a Case, B. W. Fontaine, J. Am. M. Ass., April 21, 1923, lxxx, 1129.*

Cardiac Pneumofibrosis.—While it is generally known that the clinical picture in cardiac pneumofibrosis, particularly when a result of valvular heart disease, may simulate closely that of tuberculosis of the lungs, even to the extent of hemorrhage, there has been little reference to the similarity of the radiographic appearance. Assmann has shown that stasis of blood in the capillaries and smaller veins of the lungs causes roentgenographic changes. The film commonly has a sort of "washed out" appearance, creating at first an impression of being badly exposed or faulty. There is broadening and increased prominence of the normal lung markings, made up of large and medium sized blood vessels, and also of the adjacent smaller markings. All the markings decrease uniformly in size and intensity going outwards. This increase in hilum shadows and blood vessel markings, radiating out from the hila in cases of pulmonary congestion, has given an erroneous impression of peribronchial or lymphatic tuberculosis. The extent of the change from normal varies with the severity and duration of the disease. Occasionally coarse mottling is seen between the shadows of the bronchial tree. The size and shape of the heart shadow are of considerable importance in the diagnosis. The lung findings are invariably accompanied by an abnormal appearance of the cardiac shadow, the mitral configuration being most common. The lung picture is most likely to be confused with dust pneumofibrosis, metastatic carcinoma and tuberculosis. In general the differentiation will depend upon the study of the cardiac shadow, the general hazy appearance of the lung field, and the absence of destruction and retraction.—*Cardiac Pneumofibrosis, G. W. Holmes and D. S. Dann, Am. J. Roentgenol., May, 1923, x, 343.*

Pulmonary Abscess Following Tonsillectomy.—Tuberculosis, particularly of the pulmonary type, increases the liability to abscess and to other chronic respiratory infections to a lesser degree. General anesthesia, in spite of the number of subsequent abscesses, will continue to be the anesthesia of choice. Lung abscess may come through the blood stream, by lymphatic extension, or direct aspiration. The latter seems the most probable because cough is abolished and the respiratory tract is deprived of its natural protection so the inspiration of infective material is unopposed. The following errors of technique should be guarded against: 1. Excessive manipulation of the tonsils. 2. Undue laceration of the fauces. 3. Prolonged operations. 4. Too light anesthesia. 5. Failure to have the head lower than the body. 6. Failure to guard against aspiration of blood and to control bleeding. 7. Failure to use suction apparatus. *Conclusions:* Pulmonary abscess following tonsillectomy done under general anesthesia is a real danger. 2. It is usually due to aspira-

tion of the infectious material into the lungs. 3. When there is no contraindication local anesthesia should be the anesthetic of choice. 4. There should be a careful mouth and throat toilet prior to operation. 5. Careful attention to the details of technique will allow the operator to approach tonsillectomy under general anesthesia with the liability of development of a postoperative pulmonary abscess reduced to a minimum. A case report is attached showing this complication.—*Pulmonary Abscess Following Tonsillectomy with Report of a Case, F. T. Clark, Boston M. & S. J., May 31, 1923, clxxxviii, 846.*

Amoebic Abscess of Lung.—A patient, troubled since 1915 with dysentery which was only recently diagnosed as amoebic, had enteritis, hypertrophy of the liver, a pulmonary abscess, and was in a bad general condition. Subcutaneous injections of emetin produced a speedy cure. In cases of pulmonary abscess associated with such signs an amoebic origin should be thought of.—*Abces amibien du poumon, Pissavy, Breger and Chaboure, Meeting Soc. Méd. des Hôpitaux, Paris, July 27, 1923, Reported in Presse Méd., August 1, 1923, no. 61, 677.*

Bronchomoniliasis.—Only within recent years has the frequency of mycotic infections of the respiratory tract been recognized. The part played by and the occurrence of fungi of the genus *Monilia* is discussed. This genus is closely allied to the genus *Oidium*, and the maximum incidence occurs in climates which are both hot and moist. Infection is believed to occur most commonly as the result of inhalation of contaminated particles. Clinically, the disease shows all grades of severity and closely resembles pulmonary tuberculosis with which it also may be associated. The diagnosis is made by finding the yeast-like bodies in the sputum, either on direct examination or by culture. Several cases of bronchomoniliasis are reported occurring in England. All received the usual treatment, namely, the administration of iodine. This can be given either by mouth or intramuscularly. Recovery was the rule. It is suggested that, as bronchomoniliasis is of more frequent occurrence in England than has hitherto been suspected and, as the clinical features are in no way distinctive, the investigation of the sputa for the presence of the fungi is important.—*Bronchomoniliasis, T. Joekes and R. H. Simpson, Lancet, July 21, 1923, ccv, 108.*

Gangrene of Lung.—A case of lung gangrene developed subsequent to tonsillectomy. For three weeks there was improvement under medical care, but a sudden turn for the worse necessitated surgical interference. The abscess was localized in the right upper lobe and evidently nearer the anterior chest wall. A two-stage operation was performed. A small incision was made, the pleural cavity opened and, after a small amount of air was sucked in, the wound was packed with gauze. Through an adherent portion of the lung 2 or 3 cc. of foul pus were withdrawn by a syringe. The clinical condition improved and the second stage was done. The gauze was removed and as the lung was adherent a trocar was introduced into the abscess cavity; a catheter drain was inserted and the wound was closed with an iodoform wick beside the drain. A moderate amount of pus drained through the tube and on coughing air was forced from the abscess cavity. Four days later temperature and pulse were lower but the tube became plugged. Its removal was followed by the extrusion of about 7 inches of necrotic lung tissue, after which air and pus issued from the sinus. Improvement followed for four weeks until a left sided pleurisy developed; fluid formed and was aspirated, the culture showing hemolytic streptococcus. Drainage of the left empyema by the closed method, followed by Dakin's treatment, resulted in good recovery.—*Gangrene of the Lung, H. Binney, Boston M. & S. J., May 31, 1923, clxxxviii, 844.*

Idiopathic Nontuberculous Spontaneous Pneumothorax.—The case reported is that of a man who had had recurring attacks of asthma and whose history was negative for tuberculosis. A left pneumothorax developed when he lifted a heavy weight. For seven weeks there was no tendency for the lung to reëxpand. Then, following the aspiration of 800 cc. of gas from the pleural cavity, complete expansion occurred in seven weeks. Reference is made to cases reported in the literature.—*Idiopathic Spontaneous Pneumothorax, Apparently Nontuberculous, I. S. Kahn, J. Am. M. Ass., April 14, 1923, lxxx, 1060.*

Hydatid Pneumothorax.—Among the nontuberculous forms of pneumothorax, one which is too little known is the variety produced by the irruption into the pleural cavity of a pulmonary hydatid cyst which has till then remained aseptic. The irruption is followed by all the signs of an ordinary pneumothorax or of a spontaneous hydropneumothorax: progressively increasing signs of effusion, more or less rapid increase of

fever, and the general symptoms of an echinococcic pyopneumothorax. These cases are distinct from those secondary pleural invasions of an already suppurating cyst growing into the bronchi, and also from the intrapleural rupture of suppurated liver cysts. A repetition of this process has been obtained experimentally. A rabbit inoculated eight months previously with the eggs of *Tenia echinococcus* died less than 24 hours after the appearance of an acute attack of dyspnea. The autopsy showed a pneumothorax produced by the rupture of a cyst at the base of the lung. The intact, enucleated mother-vesicle was found free in the pleural cavity.—*Le pneumothorax hydatique, F. Dévé, Compt. Rend. Soc. de Biol., June 9, 1923, lxxxix, 67.*

Syphilis of Lungs.—The majority of cases of syphilis of the lung show a gummatous induration, whereas the diffuse form, which closely resembles pure fibroid disease, is rarely met with. A case of the latter is reported. A male German, aged 53, had a chancre twenty years ago, and reported that his wife had had several miscarriages. He was in fairly good health until six months ago, when he began to have shortness of breath. Examination showed extreme dulness over the upper parts of both lungs, most marked in the supraclavicular regions, accompanied by vesiculobronchial breathing. Posteriorly, in one part on the left, slight cavernous breathing was heard. The heart was found to be hypertrophied with accentuated pulmonary second sound. The fingers were clubbed and the dyspnea continued. The roentgen ray suggested diffuse chronic pulmonary tuberculosis, but the lungs showed no crepitations and the sputum was negative for tubercle bacilli. On the other hand, the blood gave a strongly positive Wassermann reaction. Death occurred soon during an attack of "cardiac dyspnea." The necropsy showed diffuse fibrosis of both lungs, especially in the upper lobes. The cavernous breathing was obviously due to solid fibrosed lung over a bronchus. The heart and aorta showed syphilitic changes. A careful search showed no old tuberculous lesions. The author expresses the belief that in some cases diffuse syphilitic fibrosis of the lung commences insidiously and runs an insidious and progressive course, the patient being supposed to suffer from chronic bronchitis and emphysema.—*An Extreme Case of Diffuse Syphilitic Fibrosis of the Lungs, F. P. Weber, Brit. M. J., June 23, 1923, no. 3260, 1049.*

X-Ray Treatment of Hodgkin's Disease.—The puzzling relationship of lymphogranulomatosis or Hodgkin's disease to tuberculosis is considered and the literature reviewed in some detail. No final conclusion as to whether it is a form of tuberculosis or not can at present be reached. From the clinical standpoint the disease is to be looked upon as essentially one of the lymphatic system, in which reduced vitality opens the way to the spread of a latent tuberculosis. Attention is called to the fact that occasionally in the course of X-ray treatment of Hodgkin's disease tuberculosis, hitherto unsuspected, flares up. The clinical picture of the disease is so variable as to lead to many mistakes in diagnosis. The classical symptoms, such as collar-like enlargement of the lymph nodes of the neck and enlarged spleen, may sometimes be absent altogether. There is nothing absolutely characteristic in the blood picture, although eosinophilia is a frequent finding. Since the discontinuance of arsenic and thorium treatment, years ago, X-ray treatment has been the method of choice. Up to the present time this therapy has merely prolonged life from 1 to 3 years at the most, no lasting cure resulting. With the introduction of the method of deep radiation it was thought that perhaps success would at last result, but experience has shown that such radiation often has an unfavorable effect. Extensive necrosis with sudden absorption of large quantities of protein may lead to severe toxemia. The authors have developed a method in which this is avoided, which has so far been remarkably successful. The trunk is divided into four regions, each of which is radiated, namely, neck, breast and axillary lymph nodes, anteriorly; abdomen to the groin; neck and chest posteriorly; and lower part of the back. Radiation is begun with 10 per cent HED, filtered through 1 mm. copper, at a focal distance of 40 to 45 cm. Each part is radiated at each sitting. Intervals between sittings are increased gradually from 1 to 6 days, so that 60 to 80 per cent HED is given in 6 to 8 weeks. Three months later the series is repeated, and again a year later for prophylactic purposes. The advantages of this method are a slow absorption of the tumor, not leading to toxemia, and a long continued, intensive treatment of the patient. The results with 12 patients are described, 9 of whom unquestionably were cases of lymphogranulomatosis. Two were tuberculous and almost certainly lymphogranuloma cases also. The other may have been suffering from lymphosarcoma. Of this group 2, including the supposed lymphosarcoma case, died of other causes than Hodgkin's disease. Two died of Hodgkin's diease itself, 1 developed a recurrence of the disease two years after its clinical cure, and the other

7 have remained on the average 2½ years without a recurrence, apparently healed. The blood picture underwent one definite change in the course of treatment, an increase in eosinophiles up to 17 per cent, paradoxically a finding often noted in exacerbations of the disease itself.—*Ueber Lymphogranulomatose und ihre Behandlung mit Röntgenstrahlen, H. Chaoul and K. Lange, München. med. Wchnschr., June 8, 1923, 725.*

Difficulties in Diagnosis of Lung Tumors.—A woman, 66 years old, began to suffer from increasing dyspnoea, with cough and blood-tinged expectorations. Examination disclosed dilated subcutaneous veins over the right chest and dulness over the same area up to the third rib, but with the apex resonant. The X-ray showed a dense, well-circumscribed shadow over the whole mediastinum. No tubercle bacilli were in the sputum. The Wassermann reaction was negative. Thoracentesis was negative. Diagnosis was made of malignant tumor of the mediastinum. X-ray treatments were given for four weeks. A radiogram taken after treatment showed the shadow decreased to half of its original size. The general condition improved. Six months later the same symptoms reappeared. The radiogram showed the shadow had increased very markedly. A hard nodule was discovered in the right axilla. X-ray treatment did not improve the condition and the patient died six weeks later. The autopsy revealed a chronic pneumonitis with numerous bronchiectatic cavities in both lungs, anthracosis and calcification of the hilum lymph nodes, some tuberculous infiltration in one lung, and no evidence of malignant tumor. The cyanosis, the characteristic cough, the dyspnoea, absence of tubercle bacilli and, above all, the characteristic shadow which diminished so markedly upon X-ray treatment, all pointed to malignant tumor which was disproved at autopsy. The author emphasizes the difficulties in the diagnosis of lung tumors.—*Zur Differentialdiagnose Lungentumor und chronische Pneumonie, H. Deist, Klin. Wchnschr., March, 1923, ii, 550.*

Mediastinal Tumor with Venous Thrombosis.—A case of mediastinal sarcoma is described. Besides shortness of breath and cyanosis of ears and nose, complete thrombosis of the brachial veins and partial of the external jugulars was an outstanding feature. The X-ray examination was negative. The pulse was regular and there was no fever. Dull patches, which varied in position and extent from day to day, were found at the bases of the lungs. Death occurred in less than a year, and autopsy revealed a soft cheesy growth adherent to the manubrium and extending down to the pericardium and surrounding the large vessels at the base of the heart. The lungs were studded throughout with secondary deposits. Microscopically, the growth showed all the characteristics of round-cell sarcoma.—*Mediastinal Growth with Venous Thrombosis, J. A. MacLaren, Brit. M. J., June 30, 1923, no. 3261, 1092.*

Hemoptysis from Tracheal Varices.—The rupture of varicose tracheal veins, though not very frequent, is perhaps more common than the records indicate. The subjects are generally middle aged persons, but such hemorrhages may occur at from twenty to sixty years of age. A tolerably abundant bleeding is the only symptom; it may reach half a litre a day and lead to anemia. It occurs without premonitory disturbances, most frequently after an access of coughing. If a laryngoscopic examination is made during or soon after a hemorrhage the diagnosis is easy; an examination some time subsequent may show no signs. It seems not improbable that a certain proportion of these cases, owing to the absence of tracheal inspection, are improperly diagnosed as monosymptomatic pulmonary tuberculosis. It may, indeed, be suspected that the hemoptyses which Bard classifies as "abortive tuberculosis" are not bacillary in origin, but are actually due to tracheal venectasies. Treatment is by cauterization of the mucosa to form scar tissue; trichloracetic and chromic acids are more effective than silver nitrate; adrenalin may also be used. Hemorrhages may recur after months or years.—*Pseudo-hémoptyses tracheal d'origine venectasique, H. Mantchik, Rev. d. l. Tuberc., December, 1922, iii, 573.*

Actinomycosis of Lungs Simulating Tuberculosis.—A case report of a patient who had many of the signs and symptoms of pulmonary tuberculosis, but with heavy sputum repeatedly free from tubercle bacilli is presented. Unlike the latter, the actinomyces respect no anatomic boundaries, and frequently, as in this case, where the ninth and tenth ribs were involved, eats through to the external chest surface. Actinomycosis is common in Euorpe. The infection is believed to be acquired by those handling straw and vegetable products.—*Actinomycosis of the Lungs Simulating Tuberculosis, H. Besser, N. York Med. J. and Med. Rec., May 16, 1923, cxvii, 6231.*

Actinomycosis with Recovery.—A man, aged 22, with a history of recent lobar pneumonia, much cyanosed and with marked

dypsnea, showed signs of fluid in the right chest. A rib was resected and a serous fluid with a flaky deposit was withdrawn. Pathologically the fluid proved negative. The patient became worse, the respirations reaching 60, and death appeared imminent. A diagnosis of pericardial effusion was made, and the pericardium was opened and 25 ounces of a seropurulent fluid obtained which proved sterile on culture. A few days later a pleural effusion appeared on the left side. This was tapped and yielded a clear fluid, but the next day the character of the discharge from the right pleura and the pericardium changed, becoming thick and yellow. Examination showed in the pleural fluid the presence of numerous actinomyces. The sputum never showed these. The pericardial fluid yielded a pure culture of Staphylococcus aureus. Intensive treatment with iodine by irrigation, by mouth and intravenously resulted in recovery although an acute nephritis delayed convalescence.—*A Case of Actinomycosis with Recovery, A. D. Bigland and F. C. H. Sergeant, Brit. M. J., July 14, 1923, no. 3263, 61.*

Treatment of Actinomycosis with Friedmann's Vaccine.—Tuberculosis and actinomycosis are so similar in some of their manifestations that they have by some even been considered variations of the same disease. Friedmann has observed lesions in turtles morphologically similar to actinomycosis. Group reactions can be obtained with actinomyces and tubercle bacilli. On trial it was found that inoculation of turtle bacilli into cattle infected with actinomyces effected a rapid absorption of the granuloma. In one case of lumpy jaw the tumor began to shrink 6 days after simultaneous subcutaneous and intravenous injection of turtle bacilli, was no longer ulcerating after 10 to 12 days, and was practically healed after 5 weeks.—*Heilimpfung der Aktinomykose, F. F. Friedmann, München. med. Wchnschr., February 9, 1923, 176.*

X-Ray Injury of Neck.—A 56 year old man under roentgen ray treatment for actinomycosis of the neck, in which for some months radiations were carried out at 4-week intervals, 10 minutes at a time, developed a stenosis of the larynx due to a non-actinomycotic infiltration. Tracheotomy was resorted to, in order to relieve asphyxia. Sections taken at this time from the hard, greatly thickened subcutaneous tissue of the neck failed to show any evidence of persisting actinomyces. The wound healed poorly, and ultimately gangrene developed. The thyroid cartilage sequestrated, after which granulation tissue formed, leaving a laryngeal fistula, however. Ultimately this healed, leaving a large scar over a larynx in which cartilage could no longer be palpated. Breathing became easy, but the voice remained raw and toneless. Laryngoscopic examination disclosed thick, red vocal cords, moving well, and no evidence of actinomycosis. The picture in no way resembled actinomycosis, and the laryngeal stenosis and subsequent events were attributed to the radiation. The author warns against long continued treatment of nonmalignant disease of the neck by X-ray, particularly after connective tissue thickening has taken place; and attention is called again to the poor results of operation on such injured areas.—*Zum Kapitel der Röntgenschädigungen nach Halsbestrahlungen, E. König, München. med. Wchnschr., May 4, 1923, 558.*

Unusual Osteomyelitis Simulating Tuberculosis.—A six-year old boy of tuberculous parents had night sweats for 4 weeks. The mother had noticed a persisting small hard swelling near the anus four months previously. Examination revealed hilum tuberculosis. The Pirquet was positive to human and negative to bovine tuberculin. The anal fistulous opening, which is 7.5 cm. long, does not communicate with the rectum. The Wassermann was negative. A diagnosis of tuberculous anal fistula was made. At operation two incisions were made and the fistulous tract laid open, but despite this and repeated local applications the fistula persisted. Eight months later at a second operation, the probe in the fistula came in contact with bone. A tract which led to the symphysis pubis was laid open and a sequestrum, the size of a date, was removed from the horizontal ramus of the os pubis. The microscopic study of the sequestrum did not reveal anything which might point to the tuberculous character of the affection. The unusual features of this case are (1) osteomyelitis of the pubic bone is extremely rare; out of Fröhner's 545 cases of osteomyelitis only 10 had pubic involvement; (2) the relatively benign course of the affection; and (3) the unusual opening of the fistulous tract.—*Umschriebene Osteomyelitis des Shambein unter dem Bilde der tuberculösen Analfistel bei einen Kinde, H. Plaut, Klin. Wchnschr., February, 1923, ii, 262.*

Postpleuritic Scoliosis in Childhood.—Scoliosis is common after the resorption of a pleuritic effusion, due in the majority of instances to the contraction of new formed scar tissue. The remedy consists in constant watch for the deformity when an exudate is

being absorbed, and prompt treatment by the orthopedic specialist in the event of its appearance.—*Die Bedeutung der postpleuritischen Skoliose im Kindesalter, München. med. Wchnschr., February 9, 1923, 176.*

Cardiovascular Complications of Kyphoscoliosis.—The functional disturbances of the circulation and respiration associated with kyphoscoliosis do not receive the attention which they merit. Hippocrates recognized the common occurrence of dyspnea in these patients, and two famous clinicians of the eighteenth century, Sauvages and Cullen, mention gibbosity as a cause of dyspnea. Bouvier and Corvisart observed dilatation of the right side of the heart as a frequent pathological finding. Later Rieder found hypertrophy and dilatation of the right ventricle in 29 of 35 cases autopsied in Virchow's service. Bachmann in 1899 published the most complete investigation in an exhaustive monograph, studying 197 cases of his own and 79 recorded in the literature. Of the total, 89.5 per cent presented an organic lesion of heart or pericardium, especially hypertrophy and dilatation of the right ventricle. Displacements upward and in the opposite direction to the scoliosis were common, resulting often in tortuous and angular deviation of the aorta, the larger vessels and inferior vena cava. Kinking of a subclavian artery may cause inequality of the pulses. Of 195 deaths studied, 59.4 per cent were due to cardiac failure. The mechanism of these pathological lesions is as follows: the deformed thorax is also underdeveloped, and the lung volume greatly encroached on, while the capillary bed is lessened by the constant presence of emphysema. The pressure in the pulmonary artery becomes elevated and in time the artery itself dilates; later, hypertrophy and dilatation of the right ventricle and auricle occur. Also, in patients with kyphoscoliosis the respiratory excursions of the thorax are greatly limited. These obstructions of the lesser circulation eventually result in insufficiency of the right ventricle, just as a long continued peripheral hypertension brings about failure of the left ventricle. Failure of the right heart may be seen in a number of diseases which obstruct the lesser circulation, especially pulmonary emphysema, fibroid phthisis and extensive pleural adhesions. The usual symptoms are dyspnea, cyanosis, and edema of the legs. Dyspnea commonly appears within a few years of the establishment of a marked deformity. The vital capacity of the lungs is usually greatly diminished. Palpitation, precordial pain and vertigo may be complained of. The pulse is often rapid and irregular. Later, as myocardial insufficiency progresses, anasarca, ascites, oliguria, and hepatic enlargement may set in. The lungs in advanced cases show signs of congestion, and the pulmonic second sound is definitely accentuated. The prognosis in large measure depends on the reserve power of the heart. Intercurrent pulmonary infections may precipitate the end. Bachmann found the average age at death in men to be forty years; in women fifty-two years. Boas describes a case in a woman of twenty-nine, showing paroxysmal auricular fibrillation proved electrocardiographically with a tendency to right ventricular preponderance. Headaches and vertigo were prominent symptoms.—*The Cardiovascular Complications of Kyphoscoliosis with Report of a Case of Paroxysmal Fibrillation in a Patient with Severe Scoliosis, E. P. Boas, Am. J. M. Sci., July, 1923, clxvi, 89.*

Iodine Treatment in Chronic Articular Rheumatism.—Chronic cases due to many causes, such as gonorrhea, tuberculosis, gout, suppurating teeth and other infections, were all improved by iodine, given as a tincture in amounts reaching 900 to 1000 drops a day, taken before the morning and evening meals at which bread was eaten. Or the iodine was given as a hexamethylene-tetramine compound or as a methyl or a benzyl, crystalline compounds given chiefly by venous injection, in doses containing 0.21 to 0.42 gm. of iodine, twice a day for 20 days. The most painful forms were particularly benefited by the benzyl derivative; the gouty rheumatism was most improved by the methyl derivative. The rapid improvement included better sleep, increase of weight and restored movement. There were no toxic symptoms, a fact confirmed by experiment. The results indicate an important place for iodine in chronic rheumatism therapy.—*Medication iodée dans le traitement du rheumatisme articulaire chronique: iodomethyle, iodobenzyle associés ou isolées, Thiroloix, Brau-Gillett an Harmelin, Meeting Soc. méd. des Hôp. de Paris, June 8, 1923, Reported in Presse Méd., June 13, 1923, no. 47, 534.*

Complement Fixation in Leprosy.—Previous investigators have shown that leprosy cases give complement fixation in various degrees with a number of antigens, and there is a clear indication that the reaction is in a large measure nonspecific. By means of an improved method a study of the complement-fixing powers of leprosy sera was made with numerous antigens derived from bacteria associated with leprosy

and otherwise. A detailed description is given of methods and procedure. Antigens were made from all available acid-fast bacteria, including three types of *B. leprae*, and alcoholic extract of *B. tuberculosis* and Petroff's antigen. The usual Wassermann antigens were also used. The leprosy sera gave reactions quite generally with all the antigens employed. This property of multiple fixation may sufficiently characterize the disease to be of diagnostic significance although the assurance on this point is incomplete. Certainly, control sera from normal individuals and cases of tuberculosis and syphilis entirely failed to react with certain antigens, whereas serum from cases of leprosy have so reacted to the extent of over 93 per cent. The most characteristic fixation given by the leprosy sera was that with Bacillus leprae (Clegg) used as antigen, either in the form of a bacterial emulsion or of an alcoholic extract of the dried culture. Antibody absorption may be demonstrated in the acid-fast group if the absorbing bacteria are removed by filtration. Otherwise the resulting fluid is strongly anticomplementary. Leper serum was not deprived of the complement-fixing body when so treated with either Bacillus tuberculosis or Bacillus leprae (Clegg).—*The Complement Fixation Reaction as Applied to Leprosy, P. A. Lewis and J. D. Aronson, J. Exper. Med., August, 1923, xxxviii, 219.*

Errors in Treating Tuberculosis.—A patient with early tuberculosis is sometimes told that he is not sick enough to change radically his mode of life, when, as a matter of fact, it is at this stage of the disease that vigorous treatment is most indicated. It is a common fallacy that a patient, cured in one climate, may have a relapse if he goes elsewhere to live; most breakdowns of this character are to be explained by the patient's failure to remain under treatment long enough. A high altitude is not contraindicated in early tuberculosis with blood-spitting, but may be harmful for elderly people with hard arteries and high blood pressure, especially when the disease is of long standing, and large cavities are present. Many patients are told after a hemoptysis that the blood came from the back of the throat; pulmonary tuberculosis should be considered the cause until there is sufficient proof to the contrary. It is not reasonable to suppose that tuberculosis will heal as well in a dusty, smoky city as it will in a dry, thin, invigorating air. A high altitude is not harmful for a weak heart due to general debility or recent constitutional disease, but the patient with organic heart trouble which is barely compensated should not even attempt a moderate altitude.—*Some Common Shibboleths and Sayings Connected with Pulmonary Tuberculosis, B. Hudson, Brit. J. Tuberc., April, 1923, xvii, 71.*

Ambulatory Treatment of Tuberculosis.—The ambulatory treatment of tuberculosis demands increasing consideration, as the cost of sanatorium and specific treatment rises with the present German currency depreciation. In spite of increasing difficulties and the necessity for taking treatment at home tuberculosis remains one of the most curable of maladies. But it demands a special training on the part of the physician, beyond what is given in the usual school curriculum. Blumel emphasizes the time element in the measures employed in hygienic dietetic treatment; patients must understand that their coöperation with the physician for a long period is necessary. Hygienic treatment is very profitably supplemented with specific treatment with some form of tuberculin. This demands a knowledge of the principles of immunity.—*Die Grunde für das Versagen der ambulanten Behandlung der Lungentuberkulose und ihre Abstellung, K. H. Blümel, Münchener. med. Wchnschr., March 16, 1923, 327.*

Appraisal of Artificial Pneumothorax Treatment.—Short case records are cited to illustrate the following advantages of the treatment: successful results after failure of sanatorium and other methods; disappearance of tubercle bacilli from the sputum; quick return to work and ability to work during treatment; checking hemoptysis; converting a rapidly spreading acute type into a slow fibroid one. Pneumothorax in itself is not a cure, and rest and a quiet regular life are important during treatment. The treatment does not necessarily interfere with work in all cases and so is of special value for the industrial classes. Among the disadvantages are the time and attention required of the physician, the expense of installing and operating an X-ray plant, and the fact that only a small percentage of cases are suitable for treatment. In 25 per cent of attempted inductions, pleural adhesions interfere with the pneumothorax. Pleural effusions form in nearly half the cases, but this complication is usually not serious, and even empyemas may clear up spontaneously. Out of many forms of treatment that have been tried for pulmonary tuberculosis, artificial pneumothorax is the only one, excepting sanatorium treatment, that stays. In each case individual indications must be followed; there can be no rule of thumb.—

The Advantages and Disadvantages of Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis, L. S. T. Burrell, Tubercle, April, 1923, iv, 289.

Appraisal of Artificial Pneumothorax Treatment.—A proper selection of cases for treatment largely determines the results to be expected. In some cases the effect is not durable, due to the fact that the patients cannot continue treatment in suitable conditions for a sufficiently long period, but have to return to work and live under ordinary conditions of life while continuing to have refills. Another factor influencing results is the tendency sometimes to use pneumothorax as a last resort measure. In most cases the effort fails although occasionally the miracle happens, thus justifying the procedure. A series of 20 cases under 16 years of age is reported; 13 of these were between the ages of 13 and 15, the youngest was 5 years old, and the remainder 9, 10 and 11. In 2 cases adhesions interfered with treatment; of the remaining 18, 10 had a positive sputum. In 10 cases the results have been excellent, but only 5 of these had a positive sputum. Several cases are cited, to show how, in the rapidly acute forms of tuberculosis, pneumothorax may result in a temporary abatement of symptoms, to be followed in many cases by an unchecked extension of the disease.—*The Advantages and Disadvantages of Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis, G. E. Soltau, Tubercle, April, 1923, iv, 297.*

Late Results of Artificial Pneumothorax.—Absolute indications for pneumothorax treatment are (1) moderately advanced or advanced disease with subacute course, with or without cavity, in which the process is strictly unilateral or in which the tuberculosis of one side is strictly latent; (2) severe uncontrollable bleeding in cases in which the source of the hemorrhage is definitely known. Relative indications for pneumothorax are (1) moderately advanced or advanced disease with little tendency toward progression, with latent or subactive lesions on the other side; (2) incipient unilateral disease, progressive under other forms of treatment. Of 77 patients who were able to abstain from work and supplement the pneumothorax with climatic treatment, 50 per cent were dead at the end of 7 years, and 40.2 per cent were clinically cured. Of 14 who had the indications for pneumothorax treatment, but were unable to take it because of adhesions, 81 per cent died of tuberculosis, while 15 per cent were cured. Of 65 cases treated in the clinic, in which the operation was successful, 59 per cent died of tuberculosis in 5 years, while 32.3 per cent were clinically cured. Of 19 in which the treatment could not be carried out 88 per cent died and 8.5 per cent made clinical recovery. Of the group who were able to stop work and devote their full attention to the cure 38 per cent were rendered bacillus-free in the course of the treatment; of the clinic group 29 per cent became bacillus-free. The influence of social state is thus emphasized. Unverricht was able to divide single adhesions in many cases with the electric cautery, and in a few cases, in which the adhesions were extensive, effected separation after rib-resection.—*Beobachtungen und Dauerfolge in der Pneumothoraxbehandlung der Lungentuberkulose, Unverricht, München. med. Wchnschr., April 13, 1923, 461.*

Composition of Gases in Artificial Pneumothorax.—Several experiments were carried out in cats, rabbits and a goat. Haldane's apparatus was used for the analysis of oxygen and carbon dioxide. At present, researches are being carried out on the changes in composition of air injected into other body cavities and tissue spaces. A very early piece of research was that of Davy in 1823, performed postmortem on a case of spontaneous pneumothorax, in which the air had passed freely from a valvular ulcerated opening in the upper lobe. Davy found 8 per cent of carbon dioxide and 92 per cent of nitrogen in the gas. There have been a number of important modern researches. In 1914 Webb, Gilbert, James and Havens, making a series of observations in cases of artificial pneumothorax, concluded that, as Haldane had predicted, little if any clinical advantage was gained by the employment of nitrogen rather than air for artificial pneumothorax. Although they did not pay great attention to the reasons for the changes in composition, they gave complete details of their analyses. Their figures for carbon dioxide after many hours varied between 2.64 and 13.59 per cent, and of oxygen between 0.41 and 8.66 per cent. except when pure oxygen was injected Although they believed that an equilibrium was established with the alveolar air, they stated that the oxygen tends gradually to diminish almost to zero. They appear to have left the gases in the blood out of consideration. These have, however, been fully considered by Rist and Strohl, who explain the phenomena following injection of gas into the pleural cavity by a diffusion through the pleural membranes with rapidity proportional to the coefficient for each gas,

and depending on the partial pressure on each side of the membrane. They found that after the injection of nitrogen and oxygen the total quantity of gas was increased for a short period, owing probably to the rapid diffusion of carbon dioxide out of the blood. This rapid diffusion was confirmed in the present series of experiments. Three minutes after injecting 20 cc. of pure air containing 0.03 per cent of carbon dioxide and 20.93 per cent of oxygen into the thoracic cavity of a urethanized cat the percentage of carbon dioxide had risen to 4.50, while the oxygen had fallen only about 1 per cent. Similar results were obtained with a goat. Recently Rist and Strohl's work has been criticized by Dantrebande and Spehl, who conclude that it is more correct to state that the carbon dioxide percentage in the pleura depends on that present in the blood and bathing the compressed lung which is higher than that in the normal lung. Equilibrium is undoubtedly very rapidly established, unless the tissues have become much thickened by pathological processes. Henderson and Haggard have shown that after injecting two litres of air into the abdominal cavity of a dog equilibrium, as regards carbon dioxide, was established in an hour and three-quarters. As regards the oxygen, it seems that if the gases are left undisturbed its percentage falls very slowly and finally becomes much lower than that of the surrounding blood, probably corresponding more nearly with that in the surrounding tissue. *Summary:*—1. The carbon dioxide percentage in the gases of pneumothorax appear to approximate very rapidly that of the blood bathing the compressed lung. The volume of gas is thus increased at first, but not over about 6 per cent. 2. The oxygen percentage in the gasses of the pneumothorax approximates very slowly that in the surrounding tissues. As nitrogen diffuses out equally, it makes little difference whether oxygen or air be used. 3. Pathological fluids and tissues usually cause abnormally high percentages of carbon dioxide, and probably lower the oxygen content. 4. Any leakage in the thoracic cavity lowers the carbon dioxide percentage, but increases the oxygen percentage in the imprisoned gas.—*The Composition of the Gases in Artificial Pneumothorax, L. Hilland and J. A. Campbell, Brit. M. J., May 5, 1923, no. 3253, 752.*

Causes of Healing in Artificial Pneumothorax.—In 1921 the opinion was expressed that pneumothorax treatment always was associated with definite risk. In the most favorable cases lung function was decidedly impaired, even when it was for the most part free from tuberculosis. This impairment is due to the amount and frequency of marked connective tissue development during treatment. Similar problems are considered in this publication, in which 15 cases are carefully studied. Besides other factors, the venous hyperemia of the tuberculous tissue during pneumothorax occasioned a marked connective tissue development. The view that pneumothorax inhibits the lymphogenous spread of tuberculosis could not be concurred with. A like objection to the inhibition of bronchogenic spread during collapse therapy is entertained. It is believed, however, that hematogenous spread is inhibited by the pneumothorax. Cavities are rarely completely collapsed. It is also questioned whether a complete immobilization of the lung is attained for any length of time. However, pneumothorax treatment favors the healing of the tuberculous process, as a result of increased connective tissue development in the treated lung.—*Zur Kenntnis der Heilung der Lungentuberkulose bei Pneumothoraxbehandlung. Pathologisch-anatomische Studie, S. G. Lindblom, Beitr. z. Klin. d. Tuberk., June, 1922, lii, 1.*

Artificial Pneumothorax during Insulin Treatment.—A boy of 15 in whom insulin had reduced sugar excretion from 170 to 6 gm. and acetone from 1.77 gm. to zero, had a pneumothorax done on account of a pulmonary tuberculosis. There was an incomplete collapse due to deviation of the mediastinum and a rise of temperature suggesting bilateralization of the lesions. Insulin injections were, therefore, discontinued for 5 days and the sugar excretion rose to 111 gm. and the acetone to 1.85 gm., but they fell again as soon as the insulin treatment was resumed.—*Diabète infantile compliqué de tuberculose pulmonaire traité par le pneumothorax artificiel et insulin, Laignel-Lavistine, Chabanier and Potez, Meeting Soc. Méd. des Hôpitaux, Paris, June 22, 1923, Reported in Presse Méd., June 27, 1923, no. 51, 580.*

Artificial Pneumothorax after Serofibrinous Pleurisy.—Two patients were shown in whom complete pneumothorax had been obtained after there had been serofibrinous pleurisy necessitating drainage on the same side. Two other successful cases were reported; one had had a purulent effusion. When a pneumothorax is made after an effusion has been resorbed three possibilities exist: complete collapse, partial collapse, or no collapse may be obtained. These results occur in about equal numbers, and, consequently, there is

in these cases one chance in three of producing a successful pneumothorax.—*Pneumothorax artificiel réalisé malgre une pléurisie seroftbrineuse antérieure, Ameuille and Aris, Meeting Soc. Méd. d. Hôpitaux, Paris, July 27, 1923, Reported in Presse Méd., August 1, 1923, no. 61, 678.*

Artificial Pneumothorax for Non-tuberculous Lung Abscess in Child.—After bronchopneumonia a child of five had expectoration containing a varied flora with numerous pneumococci, but no tubercle bacilli. The cutireaction was negative. The child's general condition grew rapidly worse until insufflations of gas were begun. From the first of these expectoration diminished and disappeared completely after the seventh insufflation. The lung subsequently expanded and respiration became normal. The X-ray picture showed normal conditions, and the cure was permanent.—*Suppuration pulmonaire chez une enfant de 5 ans traitee par le pneumothorax artificiel; guerison, J. Genévrier and A. Robin, Proc. Soc. d. Pediat., Paris, June 19, 1923, Reported in Presse Méd., June 27, 1923, no. 57, 579.*

Blood Changes during Artificial Pneumothorax.—During the first two hours after refills in artificial pneumothorax there is a leucocyte drop of 30 per cent of the original count. There is a shift to the left according to Arneth. The leucocyte formula remains practically unchanged. This negative phase disappears within a few (3 to 5) hours after refills. The observations, however, are only few, four being made on each of two cases.—*Zur Frage über die Blutveränderungen bei dem künstlichen Pneumothorax, G. Altschuller, Beitr. z. Klin. d. Tuberk., July, 1922, lii, 199.*

Spontaneous Pneumothorax Complicating Artificial Pneumothorax.—A patient with complete artificial pneumothorax for 4 months developed severe pains, fever and dyspnea following a wagon ride. The heart was completely deviated to the right. Roentgenologically and clinically, there resulted a spontaneous pneumothorax, originating probably from an adhesion. Pyopneumothorax with high fever ensued. With Jessen's pleural washing with iodine potassium iodide the pleural infection was completely cured in four or five weeks.—*Spontanpneumothorax als Komplikation bei künstlichem Pneumothorax, M. Dull, Beitr. z. Klin. d. Tuberk., June, 1922, lii, 57.*

Portable Artificial Pneumothorax Apparatus.—The essential features are strength and compactness. The text must be consulted for diagrams and details.—*Ein transportable Pneumothoraxapparat, Apel, München. med. Wchnschr., February 9, 1923, 179.*

Portable Artificial Pneumothorax Apparatus.—*Ein transportable Pneumothoraxapparat, E. Hartmann, München. med. Wchnschr., March 2, 1923, 273.*

Portable Artificial Pneumothorax Apparatus.—Remarks on the articles of Apel and Hartmann.—*Ein transportable Pneumothoraxapparat, E. Dorn, München. med. Wchnschr., April 6, 1923, 433.*

Advances in Thoracic Surgery.—The development of surgery of the thorax has been slower than that of any other field; it is now passing through a period of high mortality and indifferent results. In the future it will unquestionably be made safer by a better understanding of the physiology and pathology involved, by more precise operative indications, and by a closer cooperation between the internists and surgeons. Already the physiology of open pneumothorax is being worked out on a scientific basis. It is known that an alteration of pressure in one pleural cavity affects the intrapleural pressure on the opposite side almost equally up to a certain limit, when the difference on the two sides varies with the stretching of the mediastinum. By recording simultaneously the pressure on the two sides it was possible to derive a mathematical expression which permitted an approximate calculation of the maximum opening of the chest wall which could occur in the normal subject without causing death from asphyxia; this figure was 15.6 sq. in. or 101 sq. cm. The figure varies in different persons, depending on the vital capacity and the degree of flexibility of the mediastinum; it is less in the rabbtt than in the dog. On the basis of this principle it is easy to explain the marked reduction of mortality in empyema cases during the war, after open drainage during the acute pneumonic stage was avoided. With some patients an intrathoracic operation can be performed with a disregard of any form of apparatus for differential pressure; in others some such auxiliary agent is advisable. The anesthesia of choice in thoracic work is local anesthesia combined with nitrous oxide and oxygen. Recent work on the mechanism of formation of pleural exudates suggests that the increased negative pressure of inspiration may play a part in saturating the already edematous pleura with fluid which is squeezed out dur-

ing the subsequent expiration. In acute suppurative conditions of the lung surgical drainage, postural drainage, and artificial pneumothorax are being used as methods of treatment. In chronic lung abscesses surgical drainage with a tube is usually of little avail, because of the pathological condition that is present, and the patient must usually choose between a life of chronic invalidism and a radical surgical procedure such as lobectomy. In the literature there are reports of 48 cases of bronchiectasis treated by lobectomy with an operative mortality of 52 per cent. Recently Graham has used the actual cautery in burning out completely the diseased area; two cases have resulted favorably. Surgery in the treatment of carcinoma of the esophagus and surgery of the heart valves by aid of the cardioscope are discussed.—*Recent Phases of Thoracic Surgery, E. A. Graham, J. Am. M. Ass., June 23, 1923, lxxx, 1825.*

Thoracoplastic Lung Compression.—There is but one therapeutic agency in the treatment of tuberculosis that has stood the test of time, and that is rest. For many years its technique has been studied and certain methods of applying it have come into general use. Five methods in addition to bed rest proposed for producing relative immobilization of all or part of one side are (1) postural rest, advocated by Webb and Sewall in different ways; (2) phrenic nerve section, causing hemiparalysis of the diaphragm and partial lower lobe collapse; (3) local replacement by some foreign body of the affected part (Tuffier); (4) lung collapse by intrapleural introduction of gas or air (Forlanini, 1882, and Murphy, 1898); and (5) rib reaection with narrowing of the chest, (Friedrich, Wilms, Sauerbruch, etc.). The first method (postural rest) is so simple that it demands trial in every unilateral process. The second, resection of the phernic nerve, is especially applicable when there are marked secondary changes, especially in the lower lobe. Tuffier's procedure has been used by numerous surgeons as an adjunct to extensive thoracoplasty, Archibald using it in anterior apicoplasty, leaving the first rib intact. Pneumothorax has unquestionably been a great therapeutic contribution but it frequently fails on account of pleural adhesions. In a few cases with few but troublesome adhesions, cutting of the bands with the aid of the thoracoscope is indicated before thoracoplasty; however, it is becoming plainer that, when a lung is advanced in disease and pneumothorax is tried, thoracoplasty should follow if for any reason the pneumothorax does not put the lung at rest. It is to Brauer's combination of clinical insight and surgical imagination that we owe the first suggestion for modern collapse operations. In 1906 he suggested to his surgical colleague, Friedrich, the collapsing of the whole chest wall and the operation was carried out by resecting a long piece of all the ribs on one side. These two procedures, pneumothorax and thoracoplasty, underlie our present effort at a mechanical cure of pulmonary tuberculosis. Forlanini's methods for pneumothorax have been scarcely changed in the forty years since their invention, but the original Brauer-Friedrich operation has been abandoned for less severe operations. The main difficulty and great interest of this latter treatment centre in the niceties of indication for operation and the choice of procedure. The surgeon will not regret keeping his patients under observation for several weeks before making up his mind. A release of the lung by either procedure will be most strikingly effective in chronic fibrous phthisis with cavitation, when the patients suffer not so much from their tuberculosis as from the visceral deformities and tensions arising from the process of its cure. It is the rigid chest wall that holds the lung out and keeps the cavities distended. Not only this form, however, but also the more florid suppurative and ulcerative form may be amenable to cure if rest and shrinkage are permitted. In general the indications for thoracoplasty are similar to those for pneumothorax, with the proviso that the latter should first have been tried. Most of the subjects will naturally be recruited from the chronic fibroid phthisics, in whom pneumothorax is most frequently impossible or unsatisfactory; others, with large superficial upper lobe cavities, will come for thoracoplasty after an incomplete pneumothorax; while still others, who have had pneumothorax and whose lungs have healed, will come to operation because of persistent open empyemas. The contraindications are partly covered by those for artificial pneumothorax, to which might be added a reluctance or unwillingness of the patient to accept operation. If possible, local is preferable to general anesthesia when the insensibility of the patient to safeguarding reflexes and the waste of muscular energy in useless struggling is a source of danger. Thoracoplastic collapse may be partial or total. Sauerbruch and others of experience are agreed that partial collapse is to be used only in conjunction with measures of total collapse; alone, as a primary procedure, it is dangerous, and rarely leads to a cure, while flooding of the lower part of the lung with pus is a cause of fatal postopera-

tive complications. Of the procedures for total collapse the Brauer-Friedrich operation, which divests half the chest of its bony support, is attended by severe postoperative dyspnea and high mortality, and its sphere will probably be limited to the after-treatment and collapse of open tuberculous empyemas. Sauerbruch's procedure collapses the chest by resection of smaller portions of the ribs through a paravertebral incision, the resection being done close to the spine. This operation is much less mutilating and diminishes the thoracic volume nearly, if not quite, as much, as the ribs cave in and their sternal ends drop down. The collapse is striking as soon as the first rib is severed. The operation may be done in several stages, according to the patient's condition, and under local anesthesia, and there is little or no visible deformity with the clothes on. In some cases a single resection is insufficient; due to the presence of stiff walled cavities. Here partial resection and partial compression by various means are available, such as Wilm's columnar resection, intrapleural apicolysis, introducing the hand, and extrapleural apicolysis by the methods of Tuffier, Baer, or Archibald. In some cases partial collapse with partial thoracoplasty is an ideal procedure.—*Thoracoplastic Compression of the Lung in Pulmonary Tuberculosis, P. K. Brown and L. Eloesser, Arch. Int. Med., May 15, 1923, xxxi, 701.*

Immobilization of Lungs with Liquid Paraffine.—Heavy and occasionally light liquid paraffines were injected into the pleural cavity of cats and rabbits, in the search for a material that would not cause effusion or be absorbed so rapidly as nitrogen. For the operation, compression anesthesia with oxygen and nitrous oxide proved safer than ether anesthesia. Autopsy showed that in even the oldest cases there had not been complete collapse of the lungs; there was total collapse of some lobes, occasionally even on the uninjected side, into which oil sometimes passed through the mediastinum. There were always pneumonic patches, which increased in number with the length of time the lung had been in contact with the oil. It was possible to recover from 75 to 90 per cent of the oil; apparently no chemical changes were induced by it. The animals had no fever or other clinical symptoms. In treating tuberculous patients large injections into the pleural cavity are not advisable; an initial dose of 50 cc. followed, at two week intervals, by two injections of 200 cc. each allows the pleural cavity to become accommodated to the presence of the oil. Nitrogen insufflations can be made more effective by a dose of 50 cc. of paraffine given two weeks previously.—*Lung Compression by Heavy Liquid Paraffine in the Treatment of Lung Tuberculosis, Bronchiectasis, and Lung Abscess, F. W. McGuire, Surg. Gyn. and Obst., July, 1923, xxxvii, 20.*

Endothoracic Pneumolysis.—Korbsch illustrates a description of the technique of pneumolysis with three case reports. Adhesions in the pleural cavity are located and kept under observation with the thoracoscope while an electric cautery is introduced through the chest wall near the site of the adhesions. The adhesion is cut as near the chest wall as possible. The immediate consequences of the operation are slight as a rule. After the separation of extensive adhesions a more or less severe prostration may ensue for a few days, with fever and cough. Band and stringlike adhesions may be cut by this operation, but it is not suitable for broad, obliterating adhesions. It is to be looked upon as an aid to pneumothorax treatment.—*Zur endothorakalen Pneumolyse, R. Korbsch, München. med. Wchnschr., June 8, 1923, 734.*

Section of Phrenic Nerve in Treatment of Lung Disease.—Since the first publications of Stuertz and Sauerbruch a considerable amount of literature had accumulated on the artificial paralysis of the diaphagm resulting from section of the phrenic nerve. This operation, which has been used in the treatment of several chronic lung diseases, tuberculosis in particular, has the following primary effects: paralysis of the diaphragm with upward retraction, shortening of the pleural cavity on the affected side with corresponding compression of the lung, and modification of the blood and lymph circulation in the lung. Sauerbruch's conclusion, with reference to hundreds of cases of lung disease handled by this method at the Zurich and Munich clinics, is that the hope that herein lay a healing method for progressive tuberculosis has not been realized. Many cases have improved, but none has healed. He cautions against accepting the frequent extravagant claims made on the basis of insufficient material. Cases have indeed been reported in which the pneumonic type of tuberculosis was converted into the fibroplastic and cavities were healed; but these isolated instances are to be attributed to a natural tendency which would have effected the change without the operation. It is well known that it is not rare for tuberculosis of the exudative type to go over spontaneously into the fibroplastic. The operation has distinct value, however, in special

cases, and in supplementing other treatment. Compression can be put upon an empyema pocket and pneumothorax can be supplemented. There is no question, too, that it has an inhibitory effect upon exudation, so that by use of the operation this complication of pneumothorax, that is, effusion, can be rendered less likely. Claims which have been made as to its value in bronchiectasis are also in large part overenthusiastic. A study of over 200 cases has convinced Sauerbruch that surgical healing of this condition occurs only when the process is well limited to one lobe which can be extirpated, or when large cavities or abscesses can be opened and drained. The question has been raised, whether the better results claimed by other authors have not been the result of improved technique. The chief modification is in a more radical operation on the phrenic nerve; the nerve is not merely sectioned, but the peripheral part is pulled out. By this procedure the terminations of an accessory phrenic nerve, which is present in a large proportion of bodies, are destroyed. Sauerbruch calls attention to the fact that this operation was first performed in his own clinic by Felix, who has not received proper credit from others. His contentions with respect to the value of phrenicotomy are based upon a large number of such operations. Accidents sometimes occur as a result of the operation, of which air embolism has in his experience been the most frequent. No death has ever resulted from the operation at his hands.—*Kritische Bemerkungen zur Behandlung von Lungenerkrankungen durch küntsliche Lähmung des Zwerchfelles, F. Sauerbruch, München. med. Wchnschr., June 1, 1923, 693.*

Phrenicotomy in Treatment of Pulmonary Tuberculosis.—The author reviews briefly the literature and cites several cases of phrenicotomy from his own experience. The most rational indications for this procedure are all cases of artificial pneumothorax in which, with insufficient collapse of the lung, there are adhesions between the diaphragm and the lung.—*Zur Frage der Phrenicotomie als Therapie der Lungentuberkulose, A. V. Frisch, Klin. Wchnschr., January, 1923, ii, 72.*

Section of Recurrent Laryngeal Nerve in Treatment of Laryngeal Tuberculosis.—Unilateral section of the recurrent laryngeal nerve was undertaken in 9 cases to give the most affected side complete rest and thus to promote healing. *Technique:* Incision as in tracheotomy, in the region of the cricoid cartilage, up to the upper tracheal cartilages. The anatomic structures are then pushed away from the trachea up to the angle, which is formed by the trachea and thyroid cartilage. At the point of the angle, which is the cricoid cartilage, the nerve is found under a tendinous structure, which extends from the lower border of the thyroid cartilage up to the fascia of the thyroid gland. In a few cases the nerve was only compressed but this procedure has been abandoned as function returns in less than two months thereafter. Now the author always sections the nerve after which it takes five to six months until function returns. The operation is performed under local anesthesia but the section or compression of the nerve is none the less painful. The paralyzed side of the larynx immediately after sectioning assumes the position it has in the cadaver. No untoward effects were noted from the operation. Some of the cases showed marked improvement in the affected side of the larynx. The author highly recommends the operation. His indications are hopeless cases with unilateral involvement of the larynx. The contention of some that the nonparalyzed side will become aggravated or affected by the additional work thrown on it is not supported by the experience of the author.—*Behandlung der Kehlkopftuberkulose mit Recurrenslähmung, Leichseuring, Klin, Wchnschr., March 12, 1923, ii, 498.*

Aspiration in Serofibrinous Pleurisy.—During fever, and the retention of chlorides which indicate evolution of the pleurisy, puncture should never be made. After regression sets in, even when the absorption of the effusion is very slow, it is seldom necessary to interfere. The effusion contains antibodies which the invalid needs, not only to promote recovery from the pleurisy, but even more perhaps to prevent subsequent tuberculosis. Though statistical confirmation is lacking, there seems reason to think that patients treated by aspiration become tuberculous more often and more quickly than others.—*Faut-il ponctionner les pleurésies sero-fibrineuses? Micheleau, Meeting of Soc. d. Méd. et d. Chir. d. Bordeaux, May 4, 1923, Reported in Presse Méd., June 16, 1923, no. 48, 547.*

Pleuropulmonary Reflex from Thoracentesis.—The general belief that exploratory thoracentesis is a perfectly safe procedure has undoubtedly influenced many to resort to this diagnostic measure with unwarranted frequency. The fact that accidents and even fatal issues may follow it deserves serious consideration. Foremost among these distressing occurrences comes

pleuropulmonary reflex, a symptom complex characterized by cardiorespiratory failure, tonic and clonic muscular contractions and loss of consciousness, which may appear with amazing and dramatic suddenness and even cause death. Roger and Raymond have given us the earliest descriptions. Recently, with an increased number of patients treated by artificial pneumothorax, there have appeared numerous reports of this symptom complex, so that in 1916 Sachs was able to collect 22 cases among 1,122 patients treated by 24 American authors. No pathological lesions are generally discoverable, and the reflex most frequently follows thoracentesis yielding negative results. Brauer still adheres to the theory of gas embolism, but it fails to explain the tendency to repetition at succeeding punctures. In artificial pneumothorax the accident occurs most often when all methods fail to reveal the presence of air in the pleural cavity. The data covering five years at the Montefiore Country Sanatorium have been analyzed. During this period, 162 thoracenteses for initial pneumothorax were performed and 1,824 punctures for refills. Careful anesthetization of the needle track was always carried out. Among the 162 primary punctures, pleuropulmonary reflex was encountered in 7 patients, in 3 of whom the attacks recurred. Three attacks were mild, 6 severe, 1 fatal. The vago-inhibitory type was noted in 3 and vasomotor in 7. Unconsciousness was noted in 4, tonic and clonic spasms in 5, temporary paralysis in 7, amblyopia in 3, loss of sphincter control in 1. In 7 instances injury to the visceral pleura and underlying lung was evidenced by hemoptysis or bloody sputum after introduction of needle, and in 6 cases there were extensive pleuropulmonary infiltration and fibrosis underlying the point of puncture, and no pneumothorax was possible. Among the 1,824 refills the accident occurred but twice; in one of these there was evidence of puncture of the lung and the other apparently followed separation of an adhesion. Pleuropulmonary reflex has practically never followed thoracentesis when the two pleural surfaces were widely separated so that the visceral pleura and lung could not be injured, and puncture of the parietal pleura when an anesthetic is used never causes these symptoms. It is evident that definite preventive measures can be taken. A careful consideration of history, physical findings, and especially the use of the roentgen ray, will make many exploratory punctures unnecessary. When done, careful anesthesia of all the parietal tissues, including the pleura, should be effected. A needle over 3 cm. long is rarely necessary and aspiration for diagnostic purposes can be done through the anesthetizing needle in all cases, not excluding those in which the exudate is thick and cheesy. Great care should be taken to prevent injury to the larger vessels, and the hilum region avoided. It is safer to make several punctures at different points than to move the needle in several directions from one point. Adhesions should be avoided. In the past five years all initial pneumothoraces have been done with the anesthetizing needle. The larger needles are dangerous, and that accidents are not more common may be due to disinclination to divulge them. The old practice of asking the patient to cough while the needle is in the chest is to be condemned. *Treatment:* Atropine in fair doses may be used to combat the vagus inhibition; for the vasomotor and cardiac failure, adrenalin is indicated; hot coffee per rectum and camphor in ether subcutaneously have been recommended. The needle should of course be at once withdrawn. The cardioinhibitory type of reflex is the less serious and has not in this experience proved fatal.—*Pleuro-Pulmonary Reflex: Its Etiology, Prevention and Treatment, B. P. Stivelman, Amer. J. M. Sci., June, 1923, clxv, 836.*

Brace for Severe Scoliosis.—Orthopedic corsets often constrict the chest in such a way that breathing and circulation are much impeded. Hohmann has devised a form of support which rests upon the pelvis and braces only the affected vertebrae, the rest of the chest being in no way constricted.—*Stützen für schwere Skoliosen, G. Hohmann, München. med. Wchnschr., February 9, 1923, 177.*

Physics of Heliotherapy.—The range of radiation extends almost unbroken from the large waves of wireless telegraphy to those of limited amplitude emitted by radioactive substances. Between these extremes are the infrared, the luminous, the ultraviolet, and the roentgen rays. All these radiations travel at the rate of 300,000 kilometres a second. Of this huge scale, heliotherapy employs only a few units, the solar spectrum being limited at the infrared end by wave lengths of 20μ and at the ultraviolet end by wave lengths of 0.3μ. The length of the spectrum and intensity of radiation are influenced by altitude, height of the sun above the horizon, and season. *Physiological action of direct light:* The length of the spectrum is greatest when the sun is at its zenith, smallest at sunrise and sunset. In July and August it is longest, and is minimal in December. The winter sunlight is poor

in ultraviolet rays. As between different altitudes, in summer the intensity of the different rays does not differ greatly; in winter the intensity value diminishes but always remains greater at a high altitude; hence in the highlands heliotherapy can still be employed in the winter. In the summer the highlands have the advantage of greater freshness, dryness and tone of the air. *Action of diffuse light:* This is especially intense at the seaside, forming one of the main features of the sea-coast climate; the intensity of diffuse light decreases with increasing altitude. It is increased by mists, and some days in which the sun is highly clouded are rich in actinic radiations. *Sun cure in winter and summer:* In winter one must bear in mind the relatively short length of the spectrum, the feeble maximum intensity, and its relatively short duration. Hence practically only the hours from 11 A.M. to 1 P.M. are available. In the summer the hours from 9 A.M. to 3 P.M. are available, those from 10 A.M. to 2 P.M. showing the greatest intensity and the greatest number of ultraviolet rays. Nevertheless, these hours are not always selected, on account of the high temperature. An interrupted method of exposure may be used, beginning at 9:30 or 10 A.M., with five to fifteen minutes' exposure, followed by a longer period of rest in the shade, and then repeated, the number of partial exposures varying with the nature of the illness and its situation, and above all with the individual reaction. Various observations suggest that in sunlight therapy, as in X-ray therapy, a certain amount of energy must be accumulated in the body to produce the desired effect. In certain skin lesions only certain parts of the spectrum are of value, in particular in cases of lupus, psoriasis, ulcers, fistulas, etc., for which ultraviolet rays are most beneficial. In such cases one must also remember the great actinic power of diffuse light.—*The Physics of Heliotherapy, A. Rosselet, transl. by D. P. Priestley, Brit. J. Tuberc., July, 1923, xvii, 120.*

Intrapleural Chemotherapy in Pulmonary Tuberculosis.—The tubercle is avascular; hence, intravenous chemotherapy is apt to be without favorable result. Tissue cells are nourished by way of the lymphatics, and it is likewise by way of the lymph system that tuberculosis spreads. The pleural surface, with its large number of openings by means of which substances may be absorbed into the lymphatic system, has a great advantage for chemotherapy. Heilmann punctures the chest wall under local anesthesia, between the parasternal and mamillary lines, in the second intercostal space, with a needle attached to a manometer, and allows the solution used in treatment to be drawn in by the normal inspiratory movements. He finds copper an especially favorable agent, injecting in the manner indicated 60 mgm. in the form of a 2 per cent solution of copper dimethyl glycocoll. Usually, within 2 minutes after the injection, the patient feels a burning sensation in the chest, but this disappears in 10 to 20 minutes. It is better to inject small amounts of moderately concentrated solution than large amounts of highly dilute solution, because the small quantity is spread over the pleura overlying the injured lung tissue, while the large artificial serothorax collects in the base of the pleural cavity, in contact with the healthier part of the lung.—*Die intrapleurale Chemotherapie der Lungentuberkulose, P. Heilmann, München. med. Wchnschr., April 13, 1923, 468.*

Calcium Therapy in Tuberculosis.—The literature of calcium therapy in pulmonary tuberculosis is reviewed and a series of 600 cases of this therapy by the author's method reported. The underlying principle of the author's method is that there exists an autogenism between the sodium chloride and the calcium salts of the body. They are mutually replacable. If the sodium content is lowered it is replaced by calcium. Dechlorinization of the body is avoided by $CaCl_2$ in which case as much chlorine is introduced into the body as may be withdrawn by the sodium chloride. For the purpose of a moderate withdrawal of sodium, a comparatively salt-free diet is given and the calcium is combined with potassium acetate, which has long been known to be a strong dehydrating agent, as well as an agent that abstracts sodium chloride from the body. The action of potassium acetate rests on the fact that it forms two salts with the NaCl of the body, namely KCl and Na_2CO_3, both of which are excreted in the urine. One teaspoonful of the following prescription—calcium chloride, 30, potassium acetate, 60, and water, 285,—in a glassful of warm water is given daily half an hour before breakfast. In this way it does not interfere with the HCl secretion of the stomach. The results of this treatment are very effective. Moist râles, often over large cavities, are replaced by dry râles and the respiratory sounds, especially at expiration, assume a characteristic sharpness. Along with these changes the expectoration decreases, sometimes after an initial transitory increase. This treatment had remarkable results, especially with stubborn exudates, in that the fluid absorbed rapidly. In

such cases, 6 to 8 teaspoonfuls daily for a period of 8 to 14 days were given. In pleural exudates following artificial pneumothorax smaller doses of the preparation were given. Dry cough of itself is no contraindication to the treatment, but an increase of the dry cough during this treatment is an indication for decreasing the dose or for complete cessation of the treatment. When there are renal complications one should be very guarded in the use of this treatment, but it is, however, not contraindicated.—*Kalktherapie, G. Hartwich-Borrmann, Ztschr. f. Tuberk., December, 1922, xxxvii, 193.*

Colloid of Calcium Treatment of Tuberculosis.—The report is based on 52 cases treated between April and December, 1922, of which 32 were under hospital and 20 under domiciliary conditions, and 84 per cent had tubercle bacilli in the sputum. Forty of the cases received 0.5 cc. at weekly and 12 at fortnightly intervals, by hypodermic injection. Most cases received 15 to 20 injections. None lost the tubercle bacilli from the sputum. The effect on hemoptoic tendency was doubtful; several hemoptyses occurred shortly following the injection. The temperature was apt to become elevated in the acute cases. The sputum was little influenced. Seventy-five per cent of the patients stated that they felt tired and very sleepy within a few hours. Three cases of cervical adenitis did well; also a case of tuberculous metatarsus. In some respects the effect of calcium colloid is similar to tuberculin, with a temporary increase in sputum and in discharge from sinuses. No local or focal reaction, however, could be detected. Seven girls with the "young adult" type of tuberculosis are doing better than would be expected from the ordinary hospital and fresh air treatment.—*The Treatment of Tuberculosis with Colloid of Calcium, D. C. Lloyd, Tubercle, May, 1923, iv, 348.*

Calcium Chloride in Treatment of Pleurisy with Effusion.—In a study to investigate the findings of Blum of Strasbourg that calcium chloride has a remarkable effect on inflammations of serous membranes, 10 cases are given in detail, comprising 3 of pleural effusion complicating pneumonia, 2 of tuberculous pleurisy complicating open pulmonary tuberculosis, 1 of pleural effusion complicating pregnancy, 1 of cancerous pleural effusion, 1 of cancerous ascities, and 1 of long-standing serofibrinous pleurisy with abundant effusion and high fever. Blum's technique was followed and the patients kept on a salt-low or salt-free diet during the period of calcium treatment. Anhydrous chloride of calcium was used, of which 11.1 gm. correspond to 15 gm. of the dry granular salt. Administration was both by mouth and intravenously. The most satisfactory mode of administering by mouth was to give one or two spoonfuls of the concentrated solution of calcium chloride (30 gm. of dry granular salt per 100 cc. of water) in a little coffee or milk, followed by a few swallows more of coffee or milk. Intravenously, 50 to 80 cc. of a solution of 15 grams per litre were given. By the latter method diuresis was quickly produced, as a rule, and was at its height two hours after administration. The only inconveniences were disagreeable sensations of heat, chilliness, pain and weakness. No serious accidents occurred, except one thrombosis of the brachial vein, which might well have been due to the disease itself and not the treatment. But administration by mouth had, in general, just as great effect upon effusion and fever. No effect was manifest until after the second day; at times not until the fourth or the fifth or even the sixth day. The first favorable indication was always an increased quantity of urine. This was followed by a diminution, noted the following day. Much depends on the quantity of calcium employed, and the condition of the pleura; the more altered the latter and the older the case, the more difficult the penetration of the calcium and the slower the absorption of the effusion. Large doses are necessary: in the acute case, for example, 15 gm. of the chloride in twenty-four hours, repeated on the following day if the fever continues high, and decreased by half if the temperature falls. Treatment should not be too prolonged, not more than five or six days as a rule, lest anorexia, malaise and headaches result. After terminating the administra tion of calcium, it is important to continue the regimen poor in sodium chloride for two or three days, since sodium when again given drives out the excess of calcium from the tissues and reëstablishes the normal calcium chloride tension. The author concludes that the calcium chloride treatment gives results much superior to all forms of treatment employed up to now, shortening considerably the duration of the attack. Exception is found only in the cancerous cases which were in no wise influenced.—*Le traitement de la pleurésie avec épanchement par le chlorure de calcium, Krummenacher, Ann. d. Méd., March, 1923, xiii, 204.*

Krysolgan Treatment of Pulmonary Tuberculosis.—The best indicator for a Krysolgan reaction is the pulse frequency,

which shows a slight increase as the first symptom. If other typical findings are absent, the absence of an increased pulse is against a reaction. The adverse action of Krysolgan on different patients expresses itself as a sleepy feeling or disappearance of a previous faintness, disappearance of palpitation, gastrointestinal disturbances, headaches, weakness or the appearance of these subjective symptoms, likewise increase or decrease in weight. This is explained, on the one hand, as an increased tissue reaction and metabolism; on the other, as the toxin-destroying action of Krysolgan. There occurs a hastening of the natural healing. Physical-chemical considerations are drawn upon to explain further the Krysolgan action. Parallel with the acuteness of the inflammatory reactions, there is an ion shifting and the osmotic relations in the lesion are changed and equalized by the circulating blood. In chronic tuberculous lesions the equalization is mostly complete, but the tendency to shifting remains. After exertion, chilling, tuberculin and Krysolgan a shifting occurs, and there is a focal reaction. In the focal reaction the colloidal chemical changes of the vessel walls play a part. In fibroid cases the focal reaction may not be determinable, but with prolonged treatment a therapeutic effect can be had. The increased cell destruction is to be attributed to fermentative and also hyperosmotic and hyperacidotic processes. Increased scar tissue formation appeared especially after marked reactions. In successful cases the exudative symptoms can markedly increase. Lymphstasis is significant in Krysolgan action; likewise, increased cellular elements can be determined in the sputum and blood picture. There is increase of the polynuclears and an outspoken shift of the leucocytes to the left, according to Arneth. Platelets decrease after injection, to recover shortly. Immune substances are made mobile; old Deycke-Much papules flare up again after Krysolgan. Thirteen per cent of patients became permanently bacillus-free. Krysolgan was successfully used with Much's *M Tb R*, partigens and albumose-free tuberculin. Evident tuberculin tolerance occurred during Krysolgan injections. Gastrointestinal disturbances were controlled by magnesium oxide and atropine, and nonirritating foods, without discontinuing the Krysolgan treatment. Cases, anergic as a result of extensive processes or with complicating intestinal tuberculosis, should be excluded from treatment.—*Zur Krysolgan-Behandlung von Lungentuberkulösen, F. L. Weig, Beitr. z. Klin. d. Tuberk., April, 1922, li, 211.*

Krysolgan in Tuberculosis.—A severe criticism of Levy's work on the gold therapy of tuberculosis is given. The administration of Krysolgan did not diminish the râles or clear up any dull areas in the chest. —*Die Goldbehandlung der Tuberkulose, G. Schellenberg, Deutsch. med. Wchnschr., April, 1922, xlviii, 487.*

Krysolgan in Laryngeal Tuberculosis.—Krysolgan was given intravenously to 10 cases. Marked focal reactions occurred in the larynx but not in the lungs. In a number of cases good results followed Krysolgan treatment alone; in others good results were obtained in combining it with galvanocautery treatment. A favorable action on pulmonary tuberculosis was not observed at the same time. The dose is important. Frequently, small doses (0.025 to 0.05) sufficed. —*Krysolgan bei Kehlkopftuberkulose, E. Wever, Beitr. z. Klin. d. Tuberk., June, 1922, lii, 52.*

Turpentine Oil as Remedy for Lupus.—Turpentine oil, like all ethereal oils, is locally irritating. It stimulates local leucocytosis and stimulates the leucoblastic tissue of the bone marrow. By its use, as is well known, large amounts of sterile pus may be obtained. However, in moderate concentration it does not injure tissue cells. In fact, it stimulates their growth, having an especially favorable effect upon granulation tissue. Like all ethereal oils it is a fat solvent. Because of this property it is effective against tubercle bacilli, dissolving the fatty envelope. This property, combined with its capacity for stimulating the growth of granulation tissue and for attracting phagocytic cells, makes it a valuable means of combating lupus. The oil is made up in solid form with lactose and soap (*Terpestrol Seife*). This material is also useful in lung tuberculosis, a soap with 10 per cent turpentine content being rubbed on the skin over breast, back, abdomen, arms or thighs, the large surface permitting good absorption. Favorable results were also obtained in leprosy.—*Terpentinöl als Heilmittel.—Terpestrolseifenschmierkur bei Tuberkulose, Heinz, München. med. Wchnschr., May 18, 1923, 636.*

Therapeutic Use of Tuberculin.—Logic requires that, in testing the value of any method of treating pulmonary tuberculosis, no other system should be used. Hence, at the tuberculin dispensary where the author's methods are in vogue, patients are allowed to continue their life as usual, "open

windows" are not insisted upon, drugs not given, and extra food furnished only in sufficient amount to satisfy normal nutrition. Before drawing any final conclusions, after a full course of treatment the cases must be examined regularly two or three times every year for three years and then once a year for another three to five years. Anything less than supervision for five years spoils the investigation, because it is well known that early stages of tuberculosis without any treatment may not become serious for four or five years. The length of life, ability to work, sense of energy, state of the pulse and appetite, changes in the quantity and amount of sputum, etc., are considered more useful evidences of improvement than statement of changes in physical signs. The value of tuberculin treatment cannot be accurately assessed in children affected with enlarged cervical lymph nodes, especially between the ages of 5 and 15, for at this age period children are liable to suffer from many sorts of gland swellings quite independent of tuberculosis. At this period the human tissues acquire a special resistance, and at no other period is this natural resistance greater. Hence, pulmonary tuberculosis in adults with tubercle bacilli in the sputum is more ideal material for determining the value and trustworthiness of tuberculin treatment. The subcutaneous method is the best way of giving large and progressively increasing doses of tuberculin and is considered superior to administration by inunction. There is no way of telling how much tuberculin may be absorbed by inunction. It is claimed that the minimum dose (final?) of tuberculin for securing permanent results is at least 0.6 cc. of "the stronger preparations." Among the cases treated in the tuberculin dispensary in 1910, 1911, and 1912 no death occurred in stage I cases in the succeeding ten years from tuberculosis. Of the stage II cases with positive sputum, 67 per cent were proved to be alive, after nine years. In fact, in stages I and II, after a period of nine years, 72 per cent were alive and able to work. Another group, consisting of 106 early cases of which 16 had a positive sputum, treated in 1910 to 1913 with large doses of tuberculin (TA) alone (as a rule with a final dose of 1 cc.) showed no deaths from tuberculosis down to 1920. No other details are given.—*The Therapeutic Use of Tuberculin, W. C. Wilkinson, Brit. M. J., April 21, 1923, no. 3251, 674.*

Isotopic Principle in Treatment of Tuberculosis.—Reinfection in tuberculosis calls forth a different type of reaction from the reaction to a first infection. Dead tubercle bacilli or soluble preparations like tuberculin elicit a type of reaction like that of reinfection. Upon this fact a specific therapy can be built, which without local or general injury will extend toxin reactivity to the point where it will mean immunity against infection. It is a remarkable fact that all directions for the development of this sort of immunity call for inoculation of the antigenic material in a new spot with each application. This is heterotopic inoculation. Stoeltzner believes that much more favorable results should be obtained by operation on the isotopic principle, that is, by introducing the tuberculin or similar material at the same site on successive applications. With each successive inoculation of such an allergic area an allergy of higher order is built up. As a matter of practice, it is to be noted that reactions in regions so inoculated increase in severity up to a maximum, after which weaker responses follow. The author finds the use of Moro's diagnostic tuberculin attended by the most advantages, although any type may be used. The diagnostic tuberculin salve is rubbed into an area about 5 cm. in width. A reaction may follow, persisting some weeks. Its subsidence is followed by a fresh application. The maximum reaction may result on the second dose or not until the sixth or later. Harmful results from this mode of treatment have not been observed.—*Das isotopische Prinzip in der spezifischen Behandlung der Tuberkulose, W. Stoeltzner, München. med. Wchnschr., May 25, 1923, 659.*

Phenomena of Partigen Treatment of Tuberculosis.—The recurrent flaring up of old intracutaneous lesions during specific partigen treatment is especially seen when the optimal dose is exceeded. If, after this flare-up, treatment is not discontinued the appearance of fever must be reckoned with. The flaring up is looked upon as a suitable antibody-generating function of the cells, a result of the general immunobiological relations. Besides specific therapy, there are other endogenous factors, not associated with specific treatment, which can have the same action. They are more difficult to judge, since it is impossible to exclude the endogenous stimulant. The conditions of the recurrent flare-up reactions correspond to those of the focal reaction. Immunobiologically, both reactions are probably equal. The itching of the injection site is designated as a recurrent flare-up. Since only F and N reactions flare up, this fact is viewed as indicating the importance of the fat reactivity in tuberculosis. The reaction of

lymphomas was also noted and the favorable action of roentgen treatment attributed to a suitable irritation-stimulation reaction.—*Über zelluläre Erscheinungen bei Partigen-Anwendung. (Erklärungsversuch und praktische Bedeutung der Erscheinungen), E. Szasz, Beitr. z. Klin. d. Tuberk., April, 1922, li, 302.*

Partigen Therapy of Tuberculosis.—Fifty-six cases of pulmonary and organic tuberculosis in all stages were given the Deycke-Much partial antigen treatment. *Conclusions:* Partial antigens are preëminently indicated in productive and productive-exudative types, with slight or moderate allergy or with threatened anergy, when it is desired to increase the stimulus susceptibility of the cells. If high allergy with a relatively extensive pulmonary process is present, we may attempt with great caution to assist the apparently strong-resisting force of the organism by the introduction of the antigens into the body. This treatment, however, has to be stopped immediately upon the appearance of increase of temperature and focal and systemic reactions. Chronic and stationary fibrotic cases, with strong allergy, are not suitable for partigen therapy. In these cases O. T. or tuberculin-Rosenbach can be given, as O. T. removes an existing hypersensitiveness. In grave cases, with anergy, all specific treatment should be stopped. In positive anergic forms of tuberculosis, in V. Hayek's meaning of the term, partigen treatment would be very irrational.—*Erfahrungen bei der Behandlung der Tuberkulose mit den Partialantigenen nach Deycke-Much, Warnecke, Ztschr. f. Tuberk., December, 1922, xxxvii, 184.*

Defatted Bacilli Treatment of Tuberculosis.—In general, the great successes of bacterial therapy and prophylaxis have been won in that group of diseases which are due to non-acid-fast and gram-negative microorganisms, whereas failure is the general rule in diseases caused by acid-fast and gram-positive microörganisms, such as *B. tuberculosis*. This generalization applies only to the bacterial bodies themselves, not to their soluble products, such as toxins. The rule is not absolute; for example, the partial success obtained with staphylococcus vaccines. Since acid-fastness and gram-positiveness have been proved to be due to the presence of certain waxy or fatty substances, there is an *a priori* probability that the failures to produce immunization is due to them. It is possible that these substances protect the specific bacterial proteins and prevent their liberation from the body of the bacterium, thus checking or completely stopping the production of the sole adequate stimulus for the immunity reaction of the infected organism. Working on this theory an attempt was made to produce a "defatted" bacterial antigen; and the tubercle bacillus was selected for this purpose as a representative acid-fast and gram-positive microorganism on account of its high lipoid content. As it was known that bacteria, killed with formalin or extracted with a fat solvent, such as acetone, retain their antigenic power, there was reason to hope that the residue of the tubercle bacilli, after treatment first with formalin and then with acetone to remove the lipoids, would retain all or part of the specific properties of the bacillus, and that the residue could be used for immunization. The truth of this expectation has been established by numerous experiments. Other acid-fast bacteria have been dealt with in the same manner and gram-positive microorganisms have been changed to the gram-negative condition. Animal experimentation demonstrated that the "defatted" tubercle antigen would give rise to immune substances such as bacteriolysins, complement-fixing bodies, precipitins and agglutinins on inoculation. *B. typhosus*, a rather sensitive microörganism, was subjected to the same treatment as the tubercle bacillus and was found to retain, to a very definite degree, its ability to cause the production of immune substances. Hence, this process of extraction does not materially affect antigenic powers. It is well known that the subcutaneous injection of dead tubercle bacilli or staphylococci may cause a severe local reaction with infiltration and even necrosis. Subcutaneous injections of defatted bacilli caused no local reaction, suggesting that the local disturbance might be due entirely to the highly indigestible and irritating fatty constituents of the bacillus. Lipoids alone from tubercle bacilli and staphylococci gave rise to infiltrations tending to persist. "Defatted" tubercle antigen is prepared as follows: Tubercle bacilli from liquid media, without any preliminary washing, are rubbed up with pure formalin (40 per cent formaldehyde) in a mortar to make a paste. More formalin is added with constant grinding, up to 150 or 200 cc. for each 5 gm. of wet bacilli. The suspension, in a reflux condenser, is now heated to 100°C. for four hours. It is then filtered through calcium-free paper and washed with about 100 cc. of acetone. The residue is next transferred to an extraction-thimble and extracted in a Soxhlet apparatus for twenty to twenty-four hours, at from 65° to 70°C.

Finally, the insoluble residue is taken out, dried, and ground in a sterile mortar. If the bacilli are not then entirely non-acid-fast the process is repeated, if necessary, up to even four times. One-tenth gram of the dried extracted bacilli is ground up in a sterile mortar, and sterile saline solution (0.9 per cent) is added drop by drop until a homogeneous paste is obtained. This is diluted gradually to 10 cc. with more salt solution. The suspension is then centrifugated for five to eight minutes at about 3000 r.p.m. until the milky fluid shows no granulation when examined with a 6× lens. By weighing the residue, the amount of defatted bacilli in the suspension is estimated and the latter is diluted with sterile salt solution containing 0.15 per cent formalin, so that 1 cc. contains 0.2 mgm. of dry "defatted" bacilli. In films made from this antigen, when properly stained, the "defatted" bacilli appear as rods of extreme fineness and reduced length. To determine the therapeutic effect of "defatted" tubercle antigen on animals infected with tuberculosis, four guinea pigs were used which had been previously inoculated with human tubercle bacilli of low virulence (T. B. 100, originally from the Höchst laboratory). Animals so infected usually die in from six to eight months, the extremes being four to ten months, and invariably show generalized tuberculosis. No special controls are mentioned. Treatment with "defatted" antigen was not begun unti disease was well manifest and was usually given at weekly intervals in doses of from 0.5 to 1 cc. of the antigen subcutaneously. One guinea pig died from some unknown cause following littering. The others to date were alive, having definitely outlived their estimated span by several months, at the same time showing either disappearance or marked amelioration of symptoms. Pathological study of the lesions of the dead animal showed abundant fibrosis and other evidences of a tendency towards healing. In addition, "defatted" antigen has been used in approximately 60 cases of human tuberculosis, mostly lymph node and cutaneous, with very few pulmonary cases. The time has been too short to draw any real conclusions, but improvement has apparently taken place in nearly all cases. In due course a detailed account of these cases will be published.—*A Specific Treatment of Tuberculosis, A Report on Some new Principles in Bacterial Immunity and their Application in Refractory Infections, Including Tuberculosis, G. Dreyer, Brit. M. J., June 23, 1923, no. 3260, 1065; also Brit. J. Exper. Path., June, 1923, iv, 146.*

Fornet's Defatted Bacilli in Treatment of Surgical Tuberculosis.—After a great deal of experimentation Fornet developed a method of defatting the tubercle bacillus without injuring its protein bodies. The author, using Fornet's method, devised a method of making suspensions of tubercle bacilli which he calls *tuberkulosediagnosticum.* It consists of a perfectly clear transparent fluid in which no sedimentation occurs, even after standing for several months. If this solution is centrifugated and the sediment stained after Ziehl's method, it takes on a pale red color. Single tubercle bacilli, some of which are stained pale red and some blue, are still recognized. This agent was used to determine the specific tuberculous agglutinins in the blood, and from their presence to draw conclusions as to the quantity of tuberculosis antibodies in the blood. The serum of the patient must be perfectly clear and the reading made half an hour after removal of the tube from the incubator. The blood from the patient should be obtained before breakfast and in women not during the menstrual periods. The author examined 1000 serums from cases of surgical tuberculosis, patients with diseases other than tuberculosis and healthy individuals with the following findings: Marked differences in the agglutination titres indicate an active process. A titre of 1 to 200 and over is proof for the presence of tuberculosis, while a titre of 1 to 100 indicates a probable tuberculous infection, provided the patient was not constantly exposed to infection. In apparently normal individuals, constant titres of 1 to 40 and 1 to 60 indicate absence of active tuberculous foci and are a sign of either healed tuberculosis or total absence of it. In clinically established tuberculosis a low titre indicates an anergic condition and should prompt us to institute therapeutic measures to effect a higher titre. If this is not accomplished, the patient's prognosis should be considered serious. The method cannot be employed in cases of malignant tumor, Hodgkin's disease, actinomycosis and grave metabolic diseases.—*Agglutinationsversuche mit dem Fornetschen Tuberkulosediagnosticum bei chirurgischer Tuberkulose, A. Kohler, Klin. Wchnschr., April, 1923, ii, 635.*

Treatment of Lupus with Modified Tuberculins.—Applications of various tuberculins to scarified lupus vulgaris had shown that the more a tuberculin has been purified the less favorable were the results obtained. The greatest improvement had been obtained with crude tuberculin and the

pulp-vaccine of Maragliano; and in a second series of investigations these were used after digestion with pepsin or exposure to the combined action of light and eosin. Application two or three times a week upon scarified lupus lesions produced approximate cures without causing any focal reaction visible to the naked eye. The advantage of destroying its allergic action consists in being able to use a tuberculin several times a week in large doses that could otherwise be used only in minute amounts and at long intervals. Tuberculin therapy has hitherto employed *en bloc* substances which it may be found advantageous to separate.—*Action comparative sur le lupus de tuberculines et d'extraits bacillaires divers, A. Bouveyrou, Compt. Rend. Soc. d. Biol., June 30, 1923, lxxxix, 308.*

Vital Tuberculin and Nuforal in Treatment of Pulmonary Tuberculosis.—Selter's *Vital tuberculin* and an American product, *Nuforal*, were employed therapeutically in a series of cases. There was no improvement attributable to the drugs. The untoward effects were severe pains at the site of injection and increase in temperature. The author therefore advises strongly against the use of either drug.—*Klinische Erfahrungen mit zwei neuen Tuberkulosemitteln, den Vital-Tuberkulin Selter und dem chemotherapeutischen Tuberkulosemittel Nuforal, H. Weber, Deutsch. med. Wchnschr., March, 1923, xlix, 276.*

Report of Prussian State Commission on Friedmann Treatment.—A thorough review of the literature by the commission which consisted of a number of prominent representatives of the German medical profession is given with the following conclusions: 1. The observers are in accord that the treatment is harmless. 2. Views on the value of the preparation as a therapeutic and prophylactic agent are widely different. While a goodly number believe strongly in its curative properties, the majority, among whom are the most representative tuberculosis men of Germany, deny any therapeutic value for the treatment. 3. The adherent of Friedmann claims that the unfavorable results obtained by his opponents are due to improper technique and poor selections of cases, which were so far advanced that they were unable to form antibodies any longer. 4. The most suitable cases for this treatment are cases of bone, joint, eye, urogenital and skin tuberculosis. 5. No definite report can be given as to the prophylactic and immunization value of the treatment, because of lack of experimental work on this question. 6. It is undecided as to what relation the turtle bacilli bear to the human bacilli and whether the beneficial results obtained are not due to nonspecific foreign protein therapy, The commission is of the opinion that there are not sufficient data to substantiate the claims of the Friedmann party for their treatment and yet there seem to be certain conditions in which it gave some positive results. Further work is necessary to either refute or substantiate the value of the Friedmann treatment.—*Bericht des vom Preussischen Landtag eingesetzten Ausschusses zur Prüfung des Friedmannschen Mittels, Deutsch. med. Wchnschr., April, 1923, xlix, 483.*

Spahlinger's Vaccine.—A report of the cases treated at Victoria Park with Spahlinger's vaccine during the period, 1913–1914, is given. The work was interrupted by the war and represents the results obtained during the early stages of Spahlinger's researches. Seventeen cases are reported in some detail. The authors have refrained from making any comments on these cases.—*A Series of Cases of Tuberculosis Treated with Spahlinger's Vaccine, E. H. Colbeck and S. R. Gloyne, Lancet, July 21, 1923, ccv, 116.*

Ectebin in Treatment of Tuberculosis.—Two cases show the dangerous effects of *Ectebin*. A child, 2 years old, with chronic tuberculous meningitis improved for four months upon regular treatment. *Ectebine* treatment was instituted, upon which an immediate relapse took place and the child died two months later. A middle-aged woman with quiescent pulmonary tuberculosis was also given the treatment. She became progressively worse and died three months later.—*Zur Behandlung mit Ectebin, Strecker, Deutsch. med. Wchnschr., April, 1923, xlix, 449.*

Ectebin in Scrofulous Eye Disease.—Sixty cases, from the mildest phlyctenular disease to advanced scrofula, of both sexes and all ages, were treated with *Ectebin*. Of these, 76 per cent gave positive Pirquet tests. Ectebin inoculations were usually 14 days apart. Focal reactions were never observed. Temperature rise occurred in 54 per cent. During 5 months of observation relapses occurred in only 3 cases. One of these developed high temperature and marked dermatitis. In 48 cases a definite decrease in the intensity of the Pirquet reaction took place. Ectebin is considered a preparation which is effective, not dangerous, and easy of application.—*Ektebin bei skrophulösen Augenkrankungen, O. Hartog, München. med. Wchnschr., March 9, 1923, 299.*

Results of Ectebin Treatment Measured by Hemoclinic State.—Specific percutaneous treatment of tuberculosis of a variety of types with *Ectebin* was effective. Steady clinical improvement was noted, accompanied by an approach to normal in the hemoclinic state. Focal reactions were never observed. Observation of the hemoclinic state was a valuable check on treatment. A negative phase, in which the lipase content of the blood was significantly decreased, occurred after ectebin inoculation, which lasted 14 days.—*Zur Problem der Tuberkulosebehandlung auf percutanem Wege. IV. Ergebnisse der Ektebinbehandlung gemessen am hämoklinischen Status, K. Gottlieb and O. Heller, München. med. Wchnschr., March 9, 1923, 295.*

Experiments with Phymatin.—The specific substances in tuberculin (*Phymatin*) cause a mucopurulent exudate in the conjunctiva of tuberculous cattle, which persists as lachrymation after 24 hours, or as a marked conjunctivitis with reddening and swelling of the mucous membranes and lid. In place of the fluid Phymatin it was found more convenient to use the 80 per cent Phymatin ointment which in every way replaced the former. The whole bacilli contain substances which act upon the conjunctiva of tuberculous cattle specifically like Phymatin. The bacilli, freed from xylol, ether and chloroform extracts, retain the specific irritating substances similar to Phymatin. The conjunctivae of tuberculous cattle do not react to the xylol, ether and chloroform soluble substances of the tubercle bacillus. Therefore allergically determinable fat antibodies in the sense of Much are not tenable. —*Über die Wirkung von Chloroform Äther- und Xylolextrakt aus Tuberkelbazillen sowie von Phymatin Salbe, Verglichen mit der des flüssigen Phymatins auf die Konjunktiva tuberkulöser und gesunder Rinder, E. Findeisen, Beitr. z. Klin. d. Tuberk., April, 1922, li, 236.*

Yatren in Surgical Tuberculosis.—*Yatren* causes a mild focal reaction and is of value in the treatment of cold abscesses. It is best administered in semiweekly intramuscular injections, in doses of 2 cc. of 5 per cent solution. When the focus can be reached easily, direct injection into it is sometimes of value. Tuberculous fistulas may be washed twice a week with 5 per cent yatren; granulation is stimulated. On the whole, results obtained with the yatren treatment of cold abscesses and closed bone tuberculosis are quite comparable to those following iodine-glycerol therapy. Yatren is to be considered a mildly stimulating, nonspecific therapeutic agent in tuberculosis. It has the advantage over tuberculin in that general reactions do not follow its use.— *Yatrenanwendung bei chirurgischer Tuberkulose, E. Rüscher, München. med. Wchnschr., March 30, 1923, 392.*

Edible Vaccine for Tuberculosis.—Although a large number of diseases are acquired by the alimentary route, relatively little use is made of this route in stimulating artificial immunity. The author reviews the literature on the attempts which have been made since early times to acquire immunity by eating infectious or toxic material. Besredka is cited, who believed that an immunity localized to the alimentary tract might be developed. Fornet believes that the intestine plays an important rôle in immunity, but that the immunity is not confined to the intestine. He finds that the agglutinin content of the blood of an animal for tubercle bacilli can be raised from zero to the point where reaction occurs in 1 to 40 dilution in animals never infected with tubercle bacilli, and in 1 to 200 dilution in infected animals, if the animals are fed killed, partially defatted tubercle bacilli, mixed with bile (*Edovaccine*). Similar treatment of human patients brought the agglutinin titre up to 1 to 200 or 1 to 600. An Edovaccine similarly prepared from gonococci effected a marked rise in agglutination titre in gonococcus infections, also raising the opsonic index significantly.—*"Edovaccin" der essbare Impfstoff, W. Fornet, München. med. Wchnschr., May 11, 1923, 600.*

Caseosan in Chronic Bone Disease.—This is a contribution to nonspecific protein therapy. The patients referred to in this investigation received no special treatment other than the *Caseosan*. Treatment was begun with 0.5 cc. caseosan, intravenously, and the dose was increased until the appearance of a focal reaction, with injections at 3 to 4 day intervals. It was observed that a patient who did not react to 5 cc. would not react to any amount. A number of cases of chronic arthritis were much benefited by the treatment, clinical healing following a 4 to 6 week treatment. In tuberculosis of the bones however no betterment resulted from the treatment.— *Erfahrungen mit Caseosan bei chronischer Gelenkerkrankungen, H. Mehl, München. med. Wchnschr., May 11, 1923, 597.*